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C. M. OSTERHELD

2,428,526

ANTICORROSION TANK

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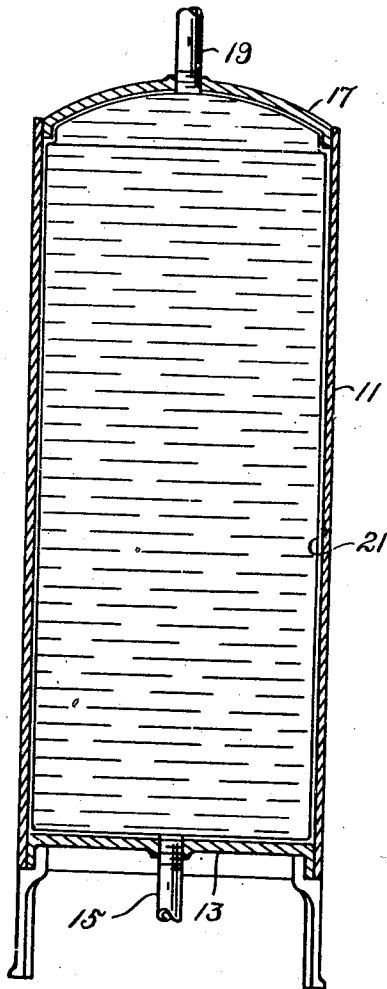


Fig-1

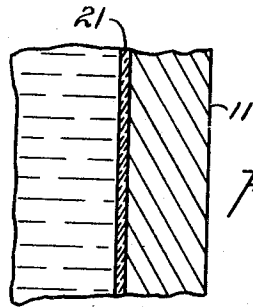


Fig-2

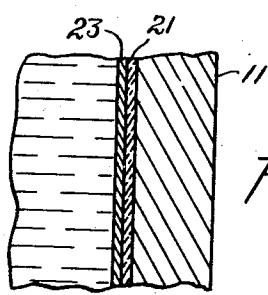


Fig-3

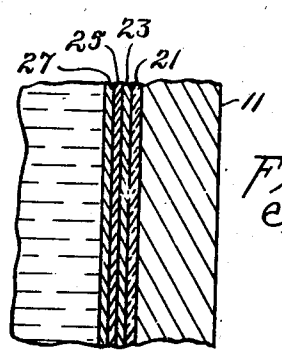


Fig-4

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ANTICORROSION TANK

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3 Claims. (Cl. 220-64)

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My invention relates to iron hot water tanks and particularly to such tanks provided with a glass lining on its inner surface.

An object of my invention is to provide a means for preventing electrolytic attack on the iron and dissociation thereof in case of cracking of the glass lining, permitting the water to engage the iron of the tank.

Other objects of my invention will either be apparent from a description of one form of device embodying my invention or will be pointed out in the course of such description and set forth in the appended claims.

In the single sheet of drawings,

Figure 1 is a sectional view of a domestic hot water tank showing the inner surface thereof covered with an anti-corrosion lining such as glass,

Fig. 2 is an enlarged fragmentary, sectional view of the tank wall and the lining of Fig. 1,

Fig. 3 is a view similar to Fig. 2 except that it shows an additional lining, and

Fig. 4 is a view similar to Figs. 2 and 3 except that a plurality of layers is shown.

Referring first of all to Fig. 1 of the drawings, I have there illustrated an ordinary domestic hot water tank 11 which is, as usual, made of a ferrous metal, such as iron. I provide also a lower closure 13 having a cold water inlet pipe 15 connected therewith as well as an upper cover 17 having a hot water outlet pipe 19 connected therewith.

As is common these days, a lining of glass 21 is provided to cover substantially the entire inner surface of the tank 11 and the thickness of such lining is on the order of only several thousandths of an inch. Since the material of such a lining is not yielding or elastic but is substantially non-elastic and since the tank may be filled with hot water at one hour of a 24-hour day and since substantially all of the hot water may be drawn off so that tank will be filled with cold water shortly thereafter, the metal of the tank and particularly the peripheral wall thereof will be subject to different temperatures with the possibility that the glass lining may crack, permitting of access of the water to the iron of the tank through the crack.

In accordance with my present invention I provide at least one layer of a metallic paint, the metal of which is electropositive to the iron such as is shown in Fig. 3 of the drawings where it is indicated by numeral 23.

While I may make the coating 23 of a zinc paint which is, as is well known, electropositive

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to iron, I do not desire to be limited thereto. In this connection, I give herewith a list of the metals which are anodic to iron, that is they are electropositive relatively to iron: lithium, calcium, magnesium, aluminum, beryllium, manganese, zinc, and chromium, all of which are electropositive and therefore anodic to iron.

Referring now to Fig. 4 of the drawings, I have there illustrated a layer 23 of a zinc paint which is applied to the outer surface of the layer 21 of glass, after which I may apply a layer 25 of an aluminum paint to the outer surface of layer 23 and if desired I may thereafter apply a coating or layer 27 which may be made of magnesium to the outer surface of layer 25 of aluminum.

Of course, it is to be understood that these added layers of metallic paints are of no effect as long as the glass coating 21 is in its initial and original condition, namely that it covers all of the inner surface of the tank. But in case a crack develops in the glass lining because of the expansion and contraction of the body of the tank or because of mishandling of the tank during the time between its manufacture and its use, then either the single layer of zinc, aluminum, or magnesium or the plurality of layers of zinc, aluminum and magnesium will be of help in preventing electrolytic attack of the water on the iron with attendant dissociation of the iron.

Let it be assumed first of all that the tank is provided with only a glass lining and let it be supposed that one or more cracks have occurred in the glass lining. In case the water is slightly acidic or slightly alkaline, an electrolytic action will start as soon as the water comes in contact with the iron through the crack in the glass lining. This means that the iron under the crack is electrolytically dissociated which, if permitted to take place for a long enough period of time, will cause a leak to occur in the wall of the tank which is beneath the crack.

If, however, a single layer of a metal electropositive to iron, such as is shown in Fig. 3, is provided, then first of all the chances are very much against the cracking or breaking of the coat of metallic paint. Even if the layer or coat of metallic paint does crack, the effect of the zinc or aluminum or magnesium coating or coatings will be to prevent electrolysis of the iron of the tank which is beneath the crack with attendant maintenance of the original thickness of the wall of the tank at that particular place. This is, of course, in line with the present provision of a hot dipped coating of zinc on the inner surface of an iron hot water tank, the preventive action of the

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zinc or the aluminum or the magnesium coating being substantially the same when applied to a glass coating, which glass coating is damaged in use.

The provision of a plurality of different metallic coatings of paint such as, for instance, an inner layer of zinc paint, then a layer of aluminum paint with an outside layer of magnesium paint will continue the preventive effect of protecting the inner surface of the wall of the tank for a much greater length of time than in case only one such layer of metallic paint is provided.

While I have hereinbefore stated that I prefer to use a single layer of a zinc paint, I do not desire to be limited thereto since I may use a single layer of an aluminum paint which when in engagement with slightly acidic water will automatically become covered with an aluminum oxide coating which is, in itself, a means for preventing electrolytic attack thereon. Hence if the presence of slightly acidic water is known to occur in a given territory, I may use a single layer of an aluminum paint.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof, and all such modifications coming clearly within the scope of the appended claims shall be considered a part of my invention.

I claim as my invention:

1. In an iron hot water tank having a glass lining on its entire inner surface, of means for preventing dissociation of the iron of the tank in case of cracking of said glass lining, comprising a plurality of layers of different metallic paints, each electropositive to iron, covering said glass lining.

2. In an iron hot water tank having a glass lining on its entire inner surface, of means for preventing dissociation of the iron of the tank in

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case of cracking of said glass lining, comprising a plurality of layers of different metallic paints, each electropositive to iron, and the most electropositive being on the outside, covering the glass lining.

3. In an iron hot water tank having a glass lining on its entire inner surface, of means for preventing dissociation of the iron of the tank in case of cracking of said glass lining, comprising a layer of zinc paint on the glass lining, then a layer of aluminum paint and then a layer of magnesium paint.

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